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Praestochrysis of the Ethiopian Region with a key and descriptions of new species(Hymenoptera: Chrysididae)

R. M. Bohart
University of California, Davis, CA

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R. M. Bohart
Department of Entomology
University of California
Davis CA 95616

Praestochrysis Linsenmaier contains those species of Chrysidinae with five teeth on the posterior margin of tergum III, first flagellomere (F-I) less than 3 times as long as broad (often much shorter), and clypeal length below antennal sockets (subantennal distance) not more than diameter of the midocellus (MOD). The genus is widespread in the Old World, but a majority of the known species are in the Ethiopian Region. Host records are rather few, but it is likely that nearly all species attack moth larvae and emerge from their cocoons. *Praestochrysis shanghaiensis* (F. Smith) is a well known parasitoid of the silk moth in the Far East.

Material for this study has been obtained from many sources, chief among which are: Albany Museum, Grahamstown, S. Africa (F. W. Gess); American Entomological Institute, Gainesville, Florida (H. Townes); Bohart Museum, University of California, Davis (R. O. Schuster); British Museum (Natural History), London (M. Day, D. Morgan); California Academy of Sciences, San Francisco (W. Pulawski); Hungarian National Museum, Budapest (J. Papp, L. Zombori); Museo Civico di Storia Naturale, Genoa (R. Poggi); Museum of Comparative Zoology, Harvard, Cambridge, Mass. (M. Thayer); Museum National d'Histoire Naturelle, Paris (S. Kelner-Pillault); National Collection of Insects, Pretoria-2 (C. D. Eardley); Ryksmuseum van Naturlyke Historie, Leiden (O. C. van Achterburg); South African Museum, Capetown (V. B. Whitehead); Tervuren Museum, Belgium (E. DeConinck); Transvaal Museum, Pretoria-1 (R. B. Thoms); Universitetets Zoologiske Museum, Copenhagen (O. Lomholdt); University of Kansas, Lawrence (R. W. Brooks), University Systematics Department, Lund (R. Danielsson).

Thanks to L. S. Kimsey for critically reviewing the manuscript. In type citations the city of museum depository is indicated by the first parenthesis, the second gives the collector. Abbreviations of technical terms are: F-I-II etc., flagellomeres; LID, least interocular distance; MOD, median ocellar diameter; PD, puncture diameter; S-I-II etc., sterna; T-I-II etc., terga; TFC, transverse frontal carina.

Praestochrysis bequaerti Bohart, new species

Holotype female: Length 11 mm. Green with some coppery reflections; deep purple on head posteriorly, scutum posteromedially; T-III deep blue; S-II spots triangular, large, contiguous (fig. 5b); wings brown, paler apically. Punctation moderate and close on head, coarse and with polished interspaces on thorax, moderately coarse on terga, T-II punctures with about 0.5 PD polished interspaces. F-I length 2.3x breadth (fig. 5c), F-V 2 MOD wide, malar space 2.8 MOD, subantennal space 1.1 MOD, LID 1.9x F-I length, TFC irregular but prominent, no transverse raised area in front, midocellus lidded, lower mesopleuron subdentate below large and polished scrobal sulcus, metanotum with a prominent triangular and pointed projection (narrowly truncate in posterior view), lateral propodeal tooth large and blunt, T-III with a discrete rounded swelling before distinctly indented pit row, 5 sharp but obtusely angled distal teeth (fig. 5a), lateral T-III margin straight.

Female holotype (Cambridge, Mass.), Lubumbashi, Katanga, Zaire, III-31-21 (J. Bequaert).

Discussion: The discrete prepit bulge and large S-II spots are especially noteworthy. The species is named for my friend, the late Joseph Bequaert, noted vespoidologist and collector of the type specimen.

Praestochrysis dentica Bohart, new species

Holotype male: Length 9.5 mm. Green, purple on vertex medially and middle scutal section posteriorly, T-III greenish blue, S-II spots broad oval and well separated (fig. 1d), wings brown. Punctation moderate and a little striatiform on scapal basin, moderately coarse on vertex, coarse on notum and pleuron, moderately coarse on terga, T-II punctures separated by about 0.5 polished PD. F-I length 1.3x breadth (fig. 1e), F-V 1.9 MOD, LID 2.4x F-I length; TFC hardly distinguishable in projecting (fig. 1a),

Key to *Praestochrysis* of the Ethiopian Region

1. T-III distal margin with 5 teeth and a lateral tooth so that entire margin is 7 toothed (fig. 2d). 2
   T-III distal margin 5 toothed, no lateral tooth, sometimes a small tubercle at extreme base of T-III. 3

2. Pronotum with a sharp, longitudinal, lateral carina; malar space 2 MOD, T-III not emarginate following lateral tooth . . . . . *inevitabilis* (Buysson)
   Pronotum rounded laterally, malar space about 1 MOD, T-III deeply emarginate following lateral tooth (fig. 2d). . . . . *septidens* Bohart

3. Metanotum simply rounded or somewhat modified by a raised area or a small posterior projection 4
   Metanotum with a large and apically rounded projection or a large triangular one which has a rather definitive sharp or truncate apex. 15

4. Metanotum without a posterior toothlike projection, evenly rounded, small species. 5
   Metanotum with a distinct toothlike projection posteriorly (view dorsally and laterally), or with a triangular raised area, not smoothly rounded. . . .7

5. Flagellum not unusually broadened, TFC reduced to a medial indication, T-III teeth sharp and nearly equal . . . . . *inops* (Gribodo)
   Flagellum broadened medially, other characters various. 6

6. F-I 1.4 times as long as broad, TFC medial only, T-II without a distinct purple spot basolaterally, T-III teeth moderately developed . . . . . *micromorpha* (Mocsáry)
   F-I 1.8 times as long as broad, TFC nearly complete and above a distinctly raised transverse area, T-II with a purple basolateral spot, T-III teeth quite short . . . . . *africanum* (Buysson)

7. F-I 2.4x as long as broad, lower mesopleuron subdentate, metanotal projection tiny and not sharp. . . . . *pentadontophora* (Bischoff)
   F-I not more than 2.0x as long as broad. 8

8. F-I about 2x as long as broad; small species, length less than 6 mm; lateral propodeal tooth small but sharp in lateral view 9
   F-I slightly to considerably less than 2x as long as broad, larger species, 6-10 mm long, lateral propodeal tooth various 10

9. T-III teeth long and sharp . . . . . *coutierei* (Buysson)
   T-III teeth short and sharp. . . . . *tropica* (Mocsáry)

10. Lower mesopleuron with a strong posterior tooth and 2 lesser ones, F-I in both sexes as long as malar space, T-III in both sexes with a delimited prepit roll. . . . . *dentica* Bohart
    Lower mesopleuron at most with 3 short and equal teeth; F-I various; T-III without a delimited prepit roll, swelling gradually in females. 11

11. Metanotum with a raised area but no sharp posterior tooth (view dorsally and laterally). 12
    Metanotum with a sharp posterior tooth (fig. 7d) 13

12. Pronotum closely punctate and with a pair of widely separated purple spots, T-II with prominent purple maculation, F-I about 1.5x as long as F-II. . . . . *nigromaculata* (Bischoff)
    Pronotum with polished intervals between punctures, no purple spots on pronotum or T-II, F-I less than 1.5x as long as F-II. . . . . *guineae* (Bischoff)

13. T-III pits obsolete (fig. 7a), F-I about 1.8x as long as broad (fig. 7c). . . . . *ivoriana* Bohart
T-III pits well developed, F-I not more than 1.5x as long as broad. 14

14. F-I hardly longer than pedicel in either sex, male F-II nearly 2x as broad as long, pronotum not carinate laterally. . . . . *spina* (Brulle)
F-I considerably longer than pedicel (male), male F-II nearly as long as broad, pronotum roughly carinate laterally. . . . . *townesorum* Bohart

15. Malar space 1-1.2 MOD . . . . . *bombycida* (Mocsary)
Malar space 1.5 MOD or more 16

16. Metanotal projection distinctly raised from anterior base, broad and flat to concave dorsomedially, blunt apically or broadly rounded 17
Metanotal projection tapering toward a sharp point or narrow truncation, not always much raised anteriorly. 20

17. S-II spots quadrangular, basally located, fused (fig. 6b). . . . . *leechi* Bohart
S-II spots rounded or oval, subbasal, separated. 18

18. S-II spots somewhat long oval (fig. 4e), metanotal projection distinctly concave dorsomedially. . . . . *saegerae* Bohart
S-II spots transverse or subtriangular, metanotal projection flat dorsomedially 19

19. Mesopleuron subdentate, F-I 1.5x as long as broad, length 8-9 mm. . . . . *gaullei* (Buysson)
Mesopleuron not dentate, F-I 1.7x as long as broad, length 9.5-11.5 mm. . . . . *popularis* (Edney)

20. Small triangular area of mesopleuron below scrobal sulcus either excavated are more sparsely ridged than punctate, or with a sharply projecting tooth 21
Small triangular area of mesopleuron below scrobal sulcus roughly punctate and not sharply dentate. 22

21. Lower triangle of mesopleuron with a sharply projecting tooth; pronotal lateral margin straight in dorsal view, not angulate; scutal punctures laterad of notaulus well separated by polished integument. . . . . *gambica* Bohart
Lower triangle of mesopleuron excavated, shiny, with a few weak ridges (fig. 3f); pronotum angled out laterally at anterior one-third (dorsal view); scutal punctures laterad of notaulus mostly less than 1 PD apart . . . . . *pretoriae* Bohart

22. T-III with a discrete prepit bulge, definitely saddled in lateral view; T-III apex bent downward, nearly truncate in lateral view; S-II contiguous spots nearly half as long as sternum itself (fig. 5b) . . . . . *bequaerti* Bohart
T-III with slight and gradual prepit bulge, saddle weak in lateral view, T-III apex not appreciably bent downward, S-II spots no more than a third as long as sternum itself. 23

23. F-I about 1.5x as long as broad, F-II shorter than F-III (male), metanotal projection extending over propodeum mainly by its apical point, lateral propodeal tooth slender toward apex . . . . . *elevata* (Mocsáry)
F-I nearly 3x as long as broad, F-II not obviously shorter than F-III; metanotal projection strong, usually carinate and sharply pointed in dorsal view; lateral propodeal tooth stout throughout. . . . . *prorata* (Edney)

coarsely punctate, medially depressed, reflective brow; midocellus lidded, lower mesopleuron with a strong posterior tooth and 2 subsidiary ones, scrobal sulcus above lower mesopleuron large and polished, metanotum with a raised triangle which is weakly projecting posteriorly, lateral propodeal tooth large and blunt, T-III with a low but distinct prepit swelling, pit row deep, 5 short distal teeth (fig. 1c), lateral margin undulate. Genitalia (figs. 1b, f), gonostylus furcate apically with outer fork stronger.

Female: About as in male.

Male holotype (San Francisco), 12 mi. n. Bukama, Zaire, II-3-58, 750 m. (E. S. Ross, R. E. Leech). Female paratype (Lawrence, Kansas), 50 mi n. Kasunga, Malawi, IV-9-67 (C. D. Michener).

Discussion: Outstanding are the prominent posterior tooth on the lower mesopleuron, separated broad oval S-II spots, stout F-I, and weakly developed metanotal projection.

Praestochrysis gambica Bohart, new species

Holotype female: Length 9.5 mm. Green; slight coppery reflections on vertex, pronotum, T-I; purple in postocellar area, middle of scutum, T-III; S-II spots triangular, subbasal, slightly separated (fig. 8b); wings brown. Punctation medium on scapal basin, coarse on top of head, thorax and terga; pronotum polished between punctures about 1 PD apart, on scutum laterally 2-3 PD apart, on terga mostly 1 PD apart. F-I length 2.1x breadth (fig. 8c), F-V 2 MOD wide, malar space 2.5 MOD, subantennal space 1.3 MOD, LID 1.9x F-I length, TFC broadly M-like, broken by a median declivity, a transverse raised area in front; midocellus lidded, horizontal area anterior to it somewhat areolate and reflective, lower mesopleuron with a strong posterior tooth, metanotum with a triangular and sharply pointed projection, (fig. 8d), lateral propodeal tooth large and blunt, T-III gradually swollen above a recessed pit row, 5 sharp distal teeth (fig. 8a), lateral T-III margin nearly straight.

Female holotype, (Lund) 6 km n. Kartung, Gambia, XI-20-77 (Cederhold et al.). Paratype female, (Gainesville), Kambui Hills, Sierra Leone, IV-8-68 (D. Owen).

Discussion: The prominent posterior tooth on the lower mesopleuron occurs also in *dentica*. The moderately long F-I in *gambica*, strong metanotal projection, and extensively polished lateral scutal area are an easy means of differentiation.

Praestochrysis ivoriana Bohart, new species

Holotype female: Length 8.5 mm. Bluish green, 3 weak purple spots on pronotum, median purple stripe on scutum, S-II spots small and triangular, slightly separated (fig. 7b), wings brown. Punctation a little separated, coarse on top of head and thorax, medium fine on scapal basin, medium on terga. F-I length 1.8x breadth, and 1.5x as long as pedicel (fig. 7c), F-V 1.9 MOD wide, malar space 2.2 MOD, subantennal space 1 MOD, LID 2x F-I length; TFC broadly M-like, recurved laterally, a transverse raised area in front; midocellus weakly lidded, mesopleuron not dentate but coarsely sculptured, metanotum nearly simple except for sharp dorsoposterior denticle, lateral propodeal tooth stout but pointed backward, T-III with a weak median longitudinal carina, pit row a little indented but pits mostly effaced, 5 sharp distal teeth (fig. 7a), lateral margin nearly straight.

Female holotype (Davis), Ivory Coast. Paratype female (Tervuren), Zepreghe, Daloa, Ivory Coast (J. Decelle).

Discussion: The only other species with the metanotum only a little modified except for the posterior denticle is *spina*. In *ivoriana* F-I is 1.5x as long as the pedicel instead of nearly the same length. Also, the pits of T-III are obsolete.

Praestochrysis leechi Bohart, new species

Holotype male: Length 8.5 mm. Green with coppery reflections; deep purple on postocellar area, scutum posteromedially; T-III deep blue; S-II spots quadrangular and contiguous (fig. 6b); wings light brown. Punctation moderately fine and close on scapal basin, coarse and close but shallow and reflective on notum, moderate and close on terga, T-II punctures separated by 0.2-0.4 PD microsculptured interspaces. F-I length 2x breadth (fig. 6c), F-V 1.8 MOD wide, malar space 2.3 MOD, subantennal space 1 MOD, LID 2x F-I length, TFC hardly distinguishable on rough brow, midocellus lidded, lower mesopleuron subdentate; metanotum with prominent projection which is raised from base, triangular, slightly concave dorsally, bluntly pointed; lateral propodeal tooth large, a little drawn out, bluntly pointing posteriorly; T-III almost creaselike, pits not clearly visible except in posterior view (fig. 6b), 5 short and obtuse teeth, lateral

margin straight. Genitalia (figs. 6a, e, f), gonostylus narrowed apically (fig. 6e), aedeagus swollen apically (fig. 6f), S-VIII truncate (fig. 6a).

Male holotype (San Francisco), 16 mi se. Sumbawanga, Tanzania, II-14-58, 2040 m. (E. S. Ross, R. E. Leech).

Discussion: The short T-III teeth, extended lateral propodeal tooth, and medially depressed metanotal projection are distinguishing, along with the rough brow and moderately long F-I.

Praestochrysis pretoriae Bohart, new species

Holotype male: Length 9.5 mm. Green with some golden reflections, T-III bluish; deep purple on vertex and scutum posteromedially, scutellum and metanotum medially; S-II spots triangular and narrowly separated, (fig. 3d), wings light brown. Punctation medium to moderately coarse, scapal basin somewhat polished medially, punctures of T-II about 0.5 polished PD apart. F-I length 2x breadth (fig. 3g), F-V 2 MOD wide, malar space 2.2 MOD, subantennal space 0.8 MOD, LID 2x F-I length, TFC broadly M-like, a transverse raised area in front (fig. 3a), midocellus lidded, lower mesopleuron subdentate with large median area polished and apunctate (fig. 3f), scrobal sulcus above lower mesopleuron large and polished, metanotum strongly projecting and ending in a spoonlike truncation, lateral propodeal tooth stout and bluntly pointed, T-III not swollen before moderately indented pit row, a faint longitudinal ridge, 5 distal teeth short and mostly obtusely angled (fig. 3c), lateral margin undulate. Genitalia (figs. 3b, c), gonostylus stout, simple apically.

Female: About as in male, T-III teeth slightly longer.

Male holotype (Pretoria-1), Pretoria, Transvaal, South Africa, X-5-51, ex Limacodidae (L. Vari). Paratypes, male, female, same data as holotype but emerged IX-3-51 and IX-17-51; female, same data as holotype but emerged VIII-8-50 from *Parasa latistriga*; male, Umfolozi Game Reserve, Natal, South Africa, XI-20-78 (D. J. Brothers).

Discussion: Among the species with prominent metanotal projection and long malar space, *pretoriae* is distinguished by the narrowly spoonlike tip of the metanotal projection, and the 2 large polished pits of the mesopleuron.

Praestochrysis saegerae Bohart, new species

Holotype female: Length 7 mm. Greenish blue with face, middle of scutum, T-III purple; S-II spots (fig. 4e), wings brown. Punctation moderate, close, somewhat transverse on scapal basin medially. F-I length 1.6x breadth (fig. 4b), F-V 2.8 MOD wide, malar space 4 MOD, subantennal space 1.1 MOD, LID 2.5x F-I length, TFC weak but complete and a little angled back medially (fig. 4a), midocellus lidded, lower mesopleuron subdentate; metanotal projection large (fig. 4d), raised from base, a little concave dorsomedially; lateral propodeal tooth stout but pointed, T-III pit row moderately deep, 5 distal teeth rather short (fig. 4c), lateral margin of T-III slightly undulate.

Female holotype (Tervuren), P. N. G., Zaire, IX-4-52 (Miss H. DeSaeger).

Discussion: The strongly raised but hardly projecting metanotal platform is concave dorsally. This feature, together with the long oval S-II spots, subdentate lower mesopleuron, and stout F-I are distinctive.

Praestochrysis septidens Bohart, new species

Holotype female: Length 6 mm. Blue to purple, venter green, middle of scutum purple, S-II spots (fig. 2e), wings lightly stained. Punctation medium to coarse and close, fine in scapal basin which is mostly polished medially. F-I 2x as long as broad (fig. 2b), F-V 2 MOD wide, malar and subantennal spaces each 1 MOD, LID 2.5x F-I length, TFC hardly indicated, (fig. 2a), midocellus lidded, mesopleuron and metanotum simple, lateral propodeal tooth stout but sharp and directed backward, T-III pit row weakly indicated, 5 slender and sharp distal teeth (fig. 2c) and a more basal pair at middle of lateral margin followed by an emargination (fig. 2d).

Female holotype, (Copenhagen), Tiwi Beaches, Kenya, VIII-23-75 (B. Petersen).

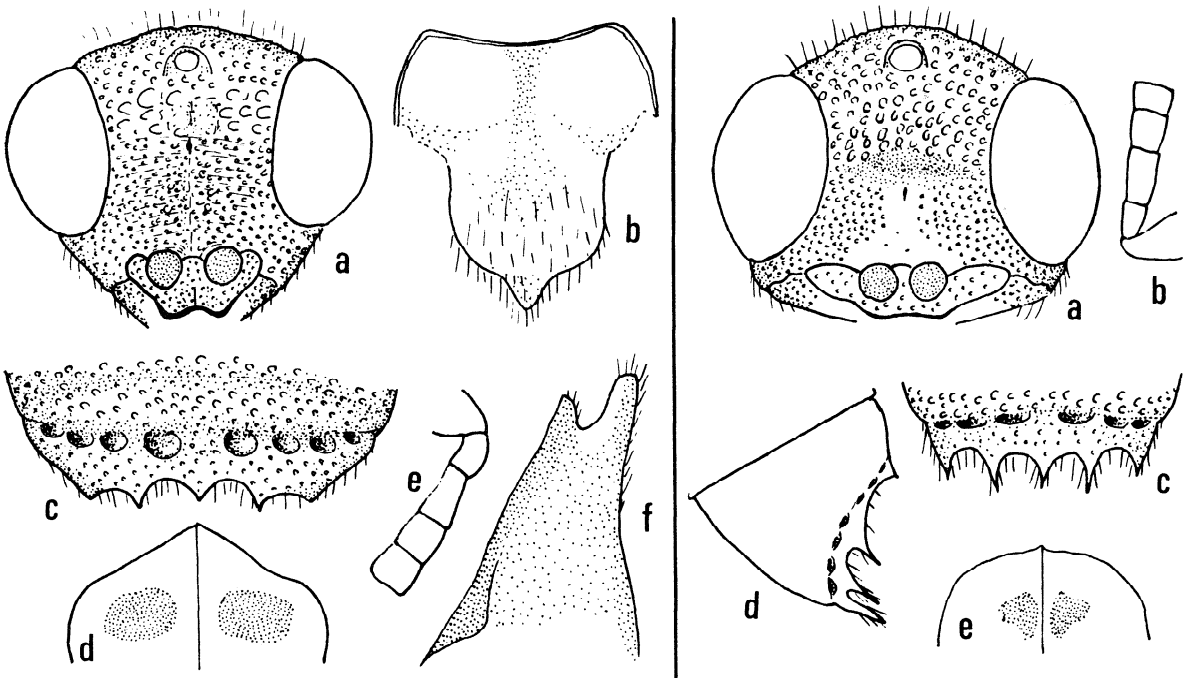
Discussion: The laterally rounded rather than carinate pronotum quickly distinguishes *septidens* from *inevitabilis*, the other known species with 7 T-III teeth. In addition, the large lateral emargination on T-III, and the unusually short malar space are notable. The only other Ethiopian Region form with a short malar space is *bombycida* which differs in many respects as shown in the key.

Praestochrysis townesorum Bohart, new species

Holotype male: Length 7 mm. Greenish blue on face, blue to purple otherwise, purplish maculae on vertex medially, across pronotum, and in three longitudinal bands (down scutum and following medially, and on scutum laterally); S-II spots medium, triangular and nearly touching posteriorly; wings brown. Punctation coarse and close on dorsum including all of T-II-III, face nearly all punctate and somewhat transversely striatiform. F-I length 1.5x breadth, F-II about as long as broad, F-V 2 MOD wide, malar space 2.3 MOD, subantennal space 1 MOD, TFC strong and straight, recurved laterally, a transverse area in front bounded below by a weak TFC-like carina, midocellus weakly lidded, mesopleuron nearly simple but scrobal sulcus large, metanotum nearly simple except for sharp dorsoposterior denticle, lateral propodeal tooth stout but pointing posteriorly and hind edge a little convex near base, T-III with a fine median longitudinal carina, pit row indented and pits distinct, 5 short distal teeth, lateral ones quite weak, lateral margin of T-III straight except for a tubercle at extreme base. Genitalia: gonostylus narrowed apically, aedeagus simple, S-VIII narrowed and pointed posteriorly.

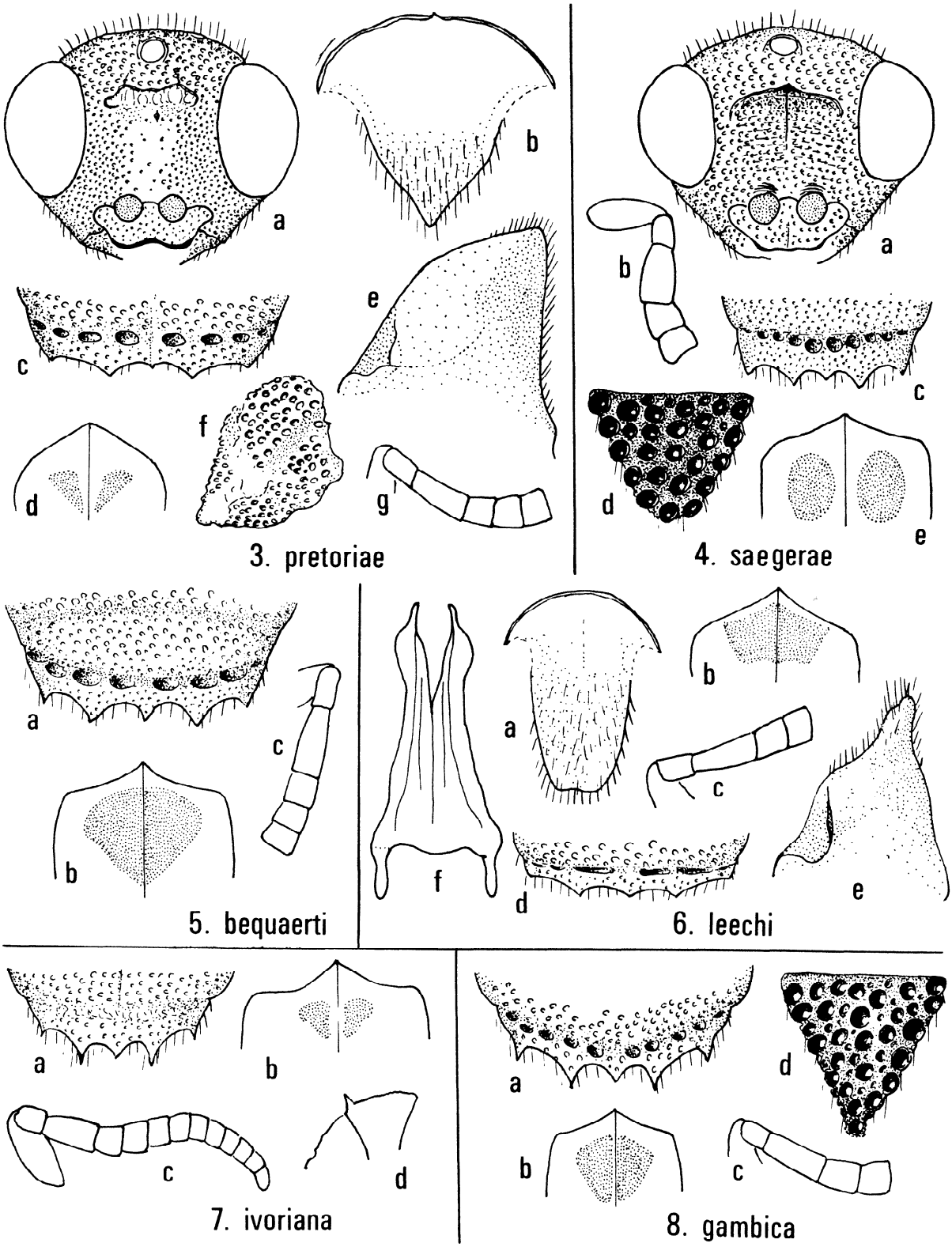
Male holotype (Gainesville), St. Lucia Estuary, Natal Province, South Africa, XI-15-20 (H. and M. Townes).

Discussion: Although resembling *ivoriana* and *spina* in many respects, *townesorum* differs from the former by the distinct row of pits on T-III, and from the latter by the longer F-I-II as indicated in the key. Also, the coarse, close tergal punctation and extremely weak lateral teeth of T-III are notable.



Explanation of Illustrations

Fig. 1, a, face; b, S-VIII; c, T-III apex; d, S-II spots; e, antennal base; f, gonostylus. Fig. 2, a, face; b, antennal base; c, T-III apex; d, T-III apex lateral; e, S-II spots. Fig. 3, a, face; b, S-VIII; c, T-III apex; d, S-II spots; e, gonostylus; f, left mesopleural side; g, antennal base. Fig. 4, a, face; b, antennal base; c, T-III apex; d, metanotum; e, S-II spots. Figs. 1, 3 based on male holotypes; 2-4 on female holotypes.



Explanation of Illustrations

Fig. 5, a, T-III apex; b, S-II spots; c, antennal base; d, aedeagus. Fig. 6, a, S-VIII; b, S-II spots; c, antennal base; d, T-III apex; e, gonostylus; f, aedeagus. Fig. 7, a, T-III apex; b, S-II spots; c, antenna; d, metanotum and propodeum lateral; Fig. 8, a, T-III apex; b, S-II spots; c, antennal base; d, metanotum dorsal. Figs. 5, 7, 8 based on female holotypes, 6 on male holotype.

(Continued from p. 118)

Dytiscinae

Dytiscus fasciventris Say
Dytiscus hybridus Aube
Dytiscus verticalis Say
Thermonectus basillaris basillaris (Harris)
Thermonectus nigricollis ornaticollis (Aube)
Graphoderus liberus (Say)
Acilius fraternus (Harris)
Acilius mediatus (Say)
Acilius semisulcatus Aube
Hydaticus bimarginatus (Say)

Cybistrinae

Cybister fimbriolatus fimbriolatus (Say)

Noteridae

Suphisellus puncticollis (Crotch)
Suphisellus bicolor punctipennis (Sharp)
Hydrocanthus iricolor Say
Hydrocanthus oblongus Sharp

Gyrinidae

Dineutus angustus LeConte
Dineutus assimilis (Kirby)
Dineutus carolinus LeConte
Dineutus ciliatus (Forsberg)
Dineutus discolor Aube
Dineutus emarginatus Say
Dineutus horni Roberts
Dineutus nigrior Roberts
Gyrinus aeneolus LeConte
Gyrinus rockinghamensis LeConte
Gyrinus analis Say
Gyrinus lecontei Fall
Gyrinus borealis Aube
Gyrinus frosti Fall
Gyrinus elevatus LeConte
Gyrinus lugens LeConte
Gyrinus aquiris LeConte
Gyrinus marginellus Fall
Gyrinus woodruffi Fall
Gyrinus pernitidus LeConte

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